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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 645,807	08.24 2000	Volker Weinrich	GR 97 P 1861 D	4185

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EXAMINER

AHMED, SHAMIM

ART UNIT	PAPER NUMBER
1746	2

DATE MAILED: 03/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

11/15/2000

Office Action Summary	Application No.	Applicant(s)
	09/645,807	WEINRICH ET AL.
	Examiner	Art Unit
	Shamim Ahmed	1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 August 2000.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 24 August 2000 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) Interview Summary (PTO-413) Paper No(s) _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being Indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "relatively low" in claims 1,8 and 14,in line 7 is a relative term, which renders the claim indefinite. The term "relatively low" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The use of the term renders the claims indefinite because it is not clear that the second conductive layer is etchable with a lower etch rate relative to which layer? It is suggested that if the first conductive layer is not etchable by chemical dry-etching, that should be claimed properly because the dry etching is performed by reactive ion etching (see claim 7), which is chemical dry-etching.

4. Regarding claim 1, lines 10-11, and the phrase "of the electrode configuration" renders the claim indefinite because it is unclear that the electrode is not configured until the first conductive layer is etched. It should be claimed as "dry etching the first conductive layer while using the second structured layer as a mask, thereby forming said electrode configuration".

5. Claim 14 recites the limitation "the first structured layer" in lines 12-13. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1- 7,14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinkawata (5,717,236) in view of Chung (5,976,394).

Shinkawata discloses an electrode configuration in a stacked capacitor, in which a first conductive layer (15) is formed on a second conductive layer (16) (col.16, lines 55-68).

Shinkawata inherently teaches that the first conductive layer is unetchable to chemical dry etching because the material for the first conductive layer is similar as the instant application (see lines 18-21 at page 15 of the instant application). Shinkawata also teaches that the second and the first conductive layers are structured using a resist mask and the first conductive layer is formed using the structured second conductive layer (figure 6). As to claim 14, Shindawata, further teaches that an insulation layer of silicon oxide is deposited on the second conductive layer (col.17, lines 3-5, figure 7).

Shinkawata remain silent the dry etching of the first conductive layer comprises providing an inert gas. However, Chung teaches that it is conventional to use a reactive gas such as an inert gas (argon) or a mixed gas such as Cl₂/Ar for efficiently etching platinum (col.1, lines 27-40).

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As to claims 3 and 16, it would have obvious that the reactive substance would react with the second layer to form a non-volatile compound because the second layer acts as a masking layer while etching the first conductive layer, wherein the etching constituents being similar as claimed invention. As to claims 7 and 20, Chung teaches that the dry etching of the first conductive layer of platinum is performed with an etching process of inductively coupled plasma system (col.2, lines 66-67).

Therefore, it would have been obvious to one skilled in the art at the time of claimed invention to combine Chung's teaching into Shinkawata's method for efficiently etching the first conductive layer, which is substantially difficult or substantially unetchable by chemical dry etching without making a reaction product through reaction with platinum as taught by Chung.

8. Claims 8-9,12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinkawata (5,717,236) and Chung (5,976,394) as applied to claims 1-7 and 14-20 above, and further in view of Summerfelt (5,585,300).

Shinkawata in view of Chung discussed above in paragraph 7 but fails to teach that a conductive layer is deposited in the contact hole formed in the insulation layer (see figures 8 and 13). However, it is conventional to form a conductive plug to form an interconnect between the electrode and the upper metallization layer in a capacitor, which is supported by Summerfelt. As to claims 8-9,12 and 13, Summerfelt discloses that an insulation layer of silicon oxide is deposited over the electrode configuration; silicon oxide is structured to form a contact hole and then the contact hole is filled with a

conductive layer such as tungsten, which efficiently make a contact the electrode and the upper metallization layer (col.9, lines 56-59, figures 7 and 17).

9. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinkawata (5,717,236), Chung and Summerfelt as applied to claims 8-9,12-13 above, and further in view of Yang et al (5,436,190).

Modified Shinkawata discussed above in paragraph 8 but remain silent about the deposition process of silicon oxide, which can be done by TEOS or by a silane process. However, Yang et al teach that deposition of silicon oxide is performed by using a TEOS process or by a silane process (col.4, lines 54-67). Therefore, it would have been obvious to one skill in the art at the time of claimed invention to combine Yang et al's teaching into modified Shinkawata for efficient deposition of silicon oxide as taught by Yang et al.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jolly et al (5,269,880) disclose a process of making an integrated circuit structure, wherein two conductive layers are connected through a via and also disclose that silicon oxide is conventionally deposited by TEOS process (col6, lines 10-65).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-305-7718 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

SA
March 14, 2002



RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
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